

REMARKS/ARGUMENTS

The Examiner is thanked for the clarity and conciseness of the Office Action and for the citation of the references which have been studied with interest and care.

Claim Rejections - 35 U.S.C. § 112

Claim 3 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant has amended claim 3 to address the Examiner's concern regarding proper antecedent basis for the term "the plurality of apertures". Withdrawal of this rejection is respectfully requested.

Claim Rejections - 35 U.S.C. §§ 102 and 103

Claims 1, 6, 7, 16-19 and 57 were rejected under 35 U.S.C. 102(b) as being anticipated by Borton et al. (5,078,497). Claims 8, 9 and 20 were rejected under 35 U.S.C. 103(a) as being unpatentable over Borton et al.

Borton et al. discloses a densitometer adapted to measure the reduction in the specular component of the reflectivity of a surface having a liquid deposited on a portion thereof.

Claim 2 includes the limitation, recited in the Examiner's statement of reasons for the indication of allowable subject matter regarding claims 2-5, of "the housing includes a plurality of apertures against which the sensors are coaxially aligned, the apertures being shaped and positioned relative to the sensors to control resolution and energy collection of the sensors."

Claim 2 has been rewritten in independent form to include the limitations of canceled claim 1. Claims 6, 7 and 9 have been amended to depend from claim 2.

Claims 16-20 have been canceled.

Claim 57 has been amended as follows:

57. (currently amended) An imaging device comprising:
an optical sensor including
a housing,
only one light source within the housing, the light source being
configured to emit light predominantly of a red color, and
sensors within the housing, the sensors being configured to detect
diffuse and specular reflections of the light from an object; [[and]]
means for scanning the object with the optical sensor, the means for scanning
including a carriage to which the optical sensor is attached; and
a controller for keeping track of the position of the carriage at any given time
during a scan of the object.

No new matter has been added. *See, e.g.*, Applicant's Specification, page 2, line 29 - page 3, line 11.

Borton et al. discloses a drum 30 which rotates a master sheet 28. However, Borton et al. clearly does not disclose or suggest a device capable of scanning, i.e., spatially sampling data.

In Borton et al., the drum 30 does indeed cause relative movement between the sensor and the measured surface; however, this clearly does not equate to "means for scanning..." and "a controller for keeping track of the position of the carriage at any given time during a scan of the object" as recited in amended claim 57.

In paragraph 5 of the Office Action, the following was stated:

Regarding claim 8, although Borton et al. does not specifically mention the recited arrangement of a light source, the specific angle at which a light source is aligned with respect to a surface of an object would have been obvious to one of ordinary skill in the art in view of achieving the particular desired performance and meeting different design requirements.

Applicant respectfully traverses this assertion for the reasons discussed below.

The selection of an angle of incidence by one skilled in the art of optical design is one of many variables that are considered to achieve a desired performance within a given space. The identification of one of multiple possible solutions with each having a different angle of incidence is a nontrivial task. There are not multiple solutions with respect to angle of incidence for detecting a media object in a printer.

The primary function of the specular detector of the sensor is for measuring the gloss or specular reflectance of the media surface relative to the diffuse reflectance. The ratio of the diffuse to specular reflectance is used to determine the media type (photo, plain, premium, or transparencies). Media is a reflective surface that is neither a perfect specular reflector (like a mirror) or a pure diffuse (scattering) surface. The magnitude of the specular component of the reflection varies as a function of the angle of incidence to the media surface. This reflective profile known as the Bidirectional Reflectance Distribution Function (BRDF) varies by media type. To distinguish between media types, an angle of incidence is selected at which the differences in BRDF are sufficiently greater than the variation in the BRDF between media types.

Secondly, the sensor resides in a print mechanism with mechanical variation. For a given angle of incidence, the response of the diffuse and specular detectors to the media gloss varies as a function of the distance of the sensor to media surface. For the sensor of this

invention, the solution set of angle of incidence in which gloss difference is statistically significant to separate media types over the mechanical variation of +/-0.5 mm in sensor to media distance is limited. An incident angle of 56 degrees with respect to the media surface is an example implementation within this limited solution set.

Claim 8 has been rewritten in independent form including the limitations of canceled claim 1. For the reasons discussed above, it is respectfully submitted that the subject matter recited in amended claim 8 is not disclosed or suggested by Borton et al. and would not have been obvious to one of ordinary skill in the art over the cited reference.

Allowable Subject Matter

Claims 2, 4 and 5 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 2 has been rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 4 and 5 are dependent from claim 2.

In paragraph 7 of the Office Action, it was stated that "Claim 3 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims."

Claim 3 has been rewritten in this manner.

For the reasons discussed above, it is respectfully submitted that none of Applicant's claims are anticipated by or would have been obvious to one of ordinary skill in the art over Borton et al. Withdrawal of the rejections is respectfully requested.

CONCLUDING REMARKS

Applicant submits that the application is in condition for allowance. Concurrence by the Examiner and early passage of the application to issue are respectfully requested.

Respectfully submitted,

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/Peter L. Holmes/

Peter L. Holmes

Reg. No. 37,353

Attorney for Applicant

HENRICKS, SLAVIN & HOLMES LLP

840 Apollo Street, Suite 200

El Segundo, California 90245-4737

Telephone: (310) 563-1454

Facsimile: (310) 563-1460